

# **The Use of Minimal-Scale Electron Skyrmions to Create Precision Measurements of EM Wave Phase Position by Treating Phase as Its Own Form of Angular Momentum**

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Working from the position of having a functioning skyrmion-based radio-direction-finding system and with the general angular momentum of an EM wave being established, the inherent precision afforded by the skyrmion frequency lensing effect should allow for precise phase information to be obtained from an EM wave which could be useful both for non-trigonometric ranging as well as computing applications.

With a sufficiently small electron skyrmion which is of a smaller diameter than the phase height of the EM wave being detected, cyclical changes in phase could be amplified in their signature through oscillations in the strike position of the modified wave against a detector brought about by the wave's passage through the skyrmion. These changes would be subtle, but would allow for phase position to be measured through a system which relies upon analysis of the physical position at which frequency boundaries are situated against the detector rather than photon-sensitive detection and/or excessive sampling of precision clock readings which are demanding of processor time. This is similar to the frequency-modulating effect described in the previous paper, except this effect involves the distortion to angular momentum of some portion of the wave according to phase position at the time of arrival at the skyrmion. This variability of phase position should provide a measurable "shimmering" effect in which the range of strike positions expands left and right of the generally illuminated portion of the sensor over extremely brief timescales.

By allowing subtle differences in phase position to be amplified a bit like a silhouette's size can be amplified by the relative distance between the light source, the object being measured and a wall, phase position can, with the aid of the smallest type of skyrmions, be more readily discerned, thereby allowing this additional property of EM waves to be quantified with reliability.